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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/795,998	03/10/2004	Yoshio Harada	P24845	2654
7055 7590 05/30/2007 GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			EXAMINER MCNEIL, JENNIFER C	
			ART UNIT 1775	PAPER NUMBER
			NOTIFICATION DATE 05/30/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com  
pto@gbpatent.com

**Office Action Summary**

Application No.

10/795,998

Applicant(s)

HARADA ET AL.

Examiner

Jennifer McNeil

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 January 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 8,9 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2,4 and 10-13 is/are allowed.
- 6) ☒ Claim(s) 1,3 and 5-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Jackson et al (US 5,912,087). Jackson teaches a bond coating system for a turbine engine component. Jackson teaches a substrate, an undercoat made of an aluminum containing heat resistant alloy (col. 7, lines 5-19), a chromia layer as a middle layer (col. 4, lines 5-15), and a top coat of zirconia (col. 5, lines 40-45).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson et al (US 5,912,087) in view of Beele (US 5,985,467). Jackson teaches a turbine component coating as discussed above but does not specify the thickness of the chromia layer. It is noted that Jackson teaches that the layer between the bond coat and the zirconia layer may be alumina or chromia, depending on the presence of alumina or chromia formers in the underlying bond coat. It is further noted that the instant claim language is considered to be “comprising” or “open” language with

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regard to the chromia layer, therefore any presence of alumina in the chromia layer would still be considered to read on a layer comprising chromia. Beele teaches a chromia and/or alumina anchoring layer formed between a bond coat and a zirconia layer for a turbine component. Beele further teaches the thickness of the anchoring layer is 0.2-10 microns. It would have been obvious to one of ordinary skill in the art at the time of the invention to form the chromia layer of Jackson with a thickness as taught by Beele as the layer of Jackson is also formed as an adhering layer for an outer zirconia layer, and as such would be expected to perform the function of adhering when used with the disclosed thickness range.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,985,467 to Jackson et al (US 5,912,087) as applied to claim 1 in view of U.S. Patent 5,273,712 to Czech et al.

Jackson discloses all of the limitations of claim 1 but does not explicitly disclose an Al content of the MCrAlY layer. Jackson does disclose numerous bond coating materials which may be used including MCrAlY. Czech discloses an a MCrAlY coating in which M is Ni or Fe or Co and Y may be replaced with any equivalent from the group of rare earths. Al content of 0-15 wt% overlapping the claimed range of 3-24 mass%. As Czech discloses a MCrAlY layer that is used as in conjunction with turbine components, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use the MCrAlY composition of Czech in the bond coat of Jackson. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have selected the overlapping portion of the ranges disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, *In re Malagari*, 182 USPQ 549.

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Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson et al (US 5,912,087) as applied to claim 1 in view of U.S. Patent 4,714,624 to Nalk.

Regarding claim 6, Jackson discloses all of the limitations of claim 1 but does not explicitly disclose a MCrAlY layer thickness but discloses it as thicker than the anchoring layer. Nalk discloses a MCrAlY layer thickness of 25-250 $\mu$ m overlapping the claimed range of 30-50 $\mu$ m thick.

Furthermore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to use a thickness within the claimed range because "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages." In re Hoeschele, 406 F.2d 1403, 160 USPQ 809(CCPA 1969). Nalk discloses the MCrAlY layer to be applied by vapor deposition or spray, however, applicant is reminded that it is the product itself which must be new and unobvious, see In re Pinkington 162 USPQ 145, 147 (C.C.P.A. 1969).

Product by process claimed are not patentably distinct over product claims unless it can be shown that the product produced by the process is in some manner measurably distinct from the product produced by another process, therefore there will be no weight given to the product by process verses product claims.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson et al (US 5,912,087) as applied to claim 1 in view of U.S. Patent 5,514,482 to Strangman.

Regarding claim 7, Jackson discloses all of the limitations of claim 1 and discloses a stabilized zirconia topcoat applied by methods such as electron beam physical vapor deposition but does not explicitly disclose the stabilizer percentage or the layer thickness (column 5 lines 64-67 and column 6 lines 24-32). However, Strangman discloses a zirconia thermal barrier for use with a MCrAlY bond

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coat on a turbine component. Strangman discloses the zirconia may be stabilized with CaO, MgO, CeO<sub>2</sub> and Y<sub>2</sub>O<sub>3</sub> and may contain 0-20 wt% Y<sub>2</sub>O<sub>3</sub> overlapping the claimed range of 5-40 mass% Y<sub>2</sub>O<sub>3</sub> (column 4 lines 64-67 and claim 29). Strangman discloses a zirconia layer thickness of 0.5-50 mils (12.7-1270µm) thick overlapping the claimed range (claim 3). It would have been obvious to a person having ordinary skill in the art at the time of the invention to use the composition and thickness of the zirconia layer of Strangman as a functional equivalent of Jackson since Jackson did not indicate a specific composition or thickness. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have selected the overlapping portion of the thickness and compositional ranges disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, *In re Malagari*, 182 USPQ 549. Although Jackson discloses EBPVD as the application method of the zirconia, applicant is reminded that it is the product, itself, which must be new and unobvious, see *In re Pinkington* 162 USPQ 145, 147 (C.C.P.A. 1969). Product by process claimed are not patentably distinct over product claims unless it can be shown that the product produced by the process is in some manner measurably distinct from the product produced by another process, therefore there will be no weight given to the product by process verses product claims.

#### ***Allowable Subject Matter***

Claims 2, 4, 10-13 are allowed.

#### ***Response to Arguments***

Applicant's arguments with respect to claims 1, 3, 5-7 have been considered but are moot in view of the new ground(s) of rejection.

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Any inquiry concerning this communication should be directed to Jennifer McNeil at telephone number 571-272-1540.

A handwritten signature in black ink, appearing to be 'Jm', with a stylized, cursive-like flourish.

Jennifer McNeil  
SPE  
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